EGE AKADEMİK BAKIŞ / *EGE ACADEMIC REVIEW*

Cilt 23 • Sayı 1 • Ocak 2023
SS. 27/42
Doi: 10.21121/eab.980841
Başvuru Tarihi: 9 Ağustos 2021 • Kabul Tarihi: 24 Ağustos 2022

How Do Customers Respond to Digital Banking Products and Services in New Zealand?

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ABSTRACT

Fast development in the technology and the intense competition have driven banks to spend considerable money on transforming from traditional banking business to digital banking business to sustain competitive advantage. Since the changing habits, customers are demanding new approaches to access financial services through both secured and unsecured digital channels. This study develops and tests a modified theoretical model based on the Unified Theory of Acceptance and Use of Technology (UTAUT) to analyse how customers respond to digital banking products or services in New Zealand from behavioural intention perspective. This study finds that the individuals' behavioural intention towards digital banking products or services can be predicted from performance expectancy, effort expectancy, and service quality conditions. Besides, this study discovers that customer gender, age and experience are having moderating influence when determining the intention of using digital banking products or services in New Zealand. Study contributes to knowledge in the field of individual technology acceptance research. It demonstrates that customer satisfaction also plays a major role in the digital banking context.

Keywords: Digital Banking Products, User Acceptance, UTAUT, Technology Acceptance, PLS.

JEL Classification Codes: M00

INTRODUCTION

Digital banking, a concept of "home banking", firstly appeared in the form of telephone banking in the 1980s because of the lack of computer and internet resources (Howcroft, Hamilton, & Hewer, 2002). In 1996, US initiated its first online banking system and then it started to spread to other countries (Şanlı & Hobikoğlu, 2015). The bank, as a firm, is to conduct regulated activities of accepting deposits and creating credits so that they can generate revenues through lending interest, transaction fees, and financial consulting services. As the internet and digital technology evolves, the preferred accessing channels from customers start to shift and re-form customer habits.

The penetration of the internet and mobile phones enable users to interact with digital content, which becomes the foundation of transformational habits and customer preferences (Cuesta, Ruesta, Tuesta, & Urbiola, 2015; Omarini, 2017; Filotto, Caratelli, & Fornezza, 2021). The changing habits of customers are driving banks to accelerate their digitalisation transformation processes through the adoption of latest technology (Cuesta et al., 2017; Omarini, 2017; Kitsios, Giatsidis, & Kamariotou, 2021). Digitalisation transformation can trigger the development of new channels and products, the adoption of the technological infrastructure and the far-reaching changes to achieve strategic digital positioning (Cuesta et al., 2017; Filotto et al., 2021). Therefore, developing right digital banking products or services through new digital channels can be a high priority objective for banks.

Digital banking products or services have been designed for customers to access their financial information going beyond traditional channels, such as automated teller machine (ATM), telephone banking, mobile banking, online banking, and video banking, which provide different digital customer journeys (McMillan, 2015). However, traditionally, banks provide products or services to customers in person in a centralised branch during open hours (Berry & Berry, 2016). Instead of visiting a physical bank branch, digital banking products or services allow customers to make payments, request loans and pay back credit cards at home through self-service channels (CANSTAR, 2016).

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For example, customer satisfaction can increase if they can make payments to another bank account within a minute via mobile banking any time beyond the bank's working hours.

Digital banking products or services have pre-defined service level agreements (SLA), which direct the day to day service operations (Zhu, Wymer, & Chen, 2002). Managing SLAs leads to the different expectation of products or services quality; this consequently will influence customers' behaviour towards the adoption of digital banking products or services (Zhu, Wymer, & Chen, 2002). For example, customers will physically withdraw cash from one bank and then deposit money into another bank in a few hours to complete an inter-bank money transfer, instead of waiting for an overnight time to have the money transferred via digital channels. Customers will behave differently because of the pre-defined time in SLAs for inter-bank money transfer.

Digital banking products or services produce unique customer experience, which is transformed by digital technology (Parise, Guinan, & Kafka, 2016). Managing customer experience leads to different levels of customer satisfaction, this, in turn, will influence customers' behaviour towards to use digital banking products or services (Liébana-Cabanillas, Muñoz-Leiva, Sánchez-Fernández, & Viedma-del Jesús, 2016). For example, customers will pay no surcharge to withdraw cash from ATM, instead of paying additional fees to a teller in the physical bank branch. Customers will be satisfied in different levels because customer experience has been built on various digital technology.

Digital banking products or services play an essential role in banks' business. Better customer experience will increase the customer sense of efficiency of digital banking leading to increased customer loyalty. In the meantime, the delivery of banking products and services over digital channels may enable banks achieving of cost saving, increased customer base, mass customisation, easy marketing and communication operations, innovative and novel approaches or development, and also various development of areas out of their core businesses (Ukpabi & Karjaluoto, 2016). For this reason, the bank should transform the business into a digital compatible mix and shape those changes by adapting to a new business model relying on customer experience in the digital banking context.

This study addresses the question "how do bank customers respond to digital banking products or services in New Zealand?" from individual behavioural intention perspective. The success of introducing a new digital banking products or services highly depends on the benefits that digital technology can produce. Therefore, the depth of understanding major influences of customers' behavioural intention should be studied which is tightly linked to technology impacts of how digital customer experience re-shapes value proposition of banks in New Zealand. Unified theory of acceptance and use of technology (UTAUT) model, an extension of Technology acceptance model (TAM) argues that individuals will adopt a technology considering the combined effect of performance expectancy, effort expectancy, social influence, and facilitation conditions (Venkatesh & Davis, 2000). This study integrates UTAUT model with age, gender, experience, and voluntariness of use as moderating effects, and variables of satisfaction and service quality from integrative model to elaborately investigate what influences individuals to the behavioural intention towards banking products or services.

The rest of the paper is organized as follows: Next section explains the literature on digital banking, the models on technology acceptance and influential factors in digital banking. This section is followed by hypothesis development, methods, data analysis and results. Discussion and conclusion with future research concludes the paper.

LITERATURE REVIEW

Digital banking in New Zealand

New Zealand has the population of 4.5 million and GDP of $173 billion in USD (Economic Overview, 2016). Compared to other countries like the US or Australia, New Zealand is relatively small regarding population, market size, economical scale and demonstrates less risk aversion in business culture (Gandelman & Hernandez-Murillo, 2014). Despite the amount of digital banking products or services available in the market, it is imperative to find out which aspects New Zealand banks should improve to among those digital banking products or services.

The current technological trends in the market start to re-form customers' digital experiences through tracking customer journey, managing customer service quality and enhancing customer satisfaction (Singh & Hess, 2017). Therefore, customers' view towards digital banking products or services and to what extent that customers can and will adopt digital banking products or services in their daily work and life should be understood and analysed to provide better digital banking products or services and then appropriate decisions can be made to obtain better competitive advantages in the future.

In New Zealand, top ten banks, including ANZ Bank NZ, ASB Bank, Bank of New Zealand, Co-Operative Bank, Heartland Bank, HSBC, Kiwi Bank, SBS Bank, TSB Bank, and Westpac, are providing various digital banking products or services across both on-lines channels and mobile channels (CANSTAR, 2016). Some of digital banking products or services are secured channels requiring customers' unique login such as, scheduling future payments, showing bank statements, pre-populating data for new product application, activating credit cards and debit cards, home screen transfer capability, setting a savings goal, and setting temporary card lock (CANSTAR, 2016), while others, such as mortgage repayment calculator services, location a branch function, etc. work as unsecured channels.

Digital Banking

Customers are demanding new ways to access financial services because of changing habits towards technology, such as mobile experiences, social network experience (Cuesta, Ruesta, Tuesta, & Urbiola, 2015). The gap between the demand and supply is required to be bridged. Thus, banks are facing digital challenges from these new ways of transforming into a digital bank such as the adaptation of technology platform, and automation processes (Cuesta, Ruesta, Tuesta, & Urbiola, 2015). By overcoming these digital challenges, banks can supply digital banking products or services to customers to obtain competitive advantages in the new competitive environment. Therefore, digital banking is termed as a multi-channel solution providing Internet and mobile services in addition to traditional branch services (Schmitt & Gautam, 2017).

Digital banking, in one hand like traditional banking, concludes the supply generation, products or services distribution, sales of financial products or services through digital channels to fulfil customers' need and meet their expectations (Cuesta, Ruesta, Tuesta, & Urbiola, 2015). In this regard, it is expected that digital banking products or services will give priority to end user demands. By developing new digital channels and products across internet banking, mobile banking, and text banking from social networks, banks enable end users to access financial products or services through these new approaches.

In another hand, digital banking also goes beyond the new means of access, distribution and responding to transaction business (Cuesta, Ruesta, Tuesta, & Urbiola, 2015). For example, advanced digital tracking and analytical techniques enable the possibility of managing customer's digital journey from the analysis of customer satisfaction feedback and service quality setup. The outcome of this provides a better understanding of customers' preferences, behavioural intention and the actual behaviour. Thus, digital banking products or services, as the output of digital banking, are considered as the financial products or services that allow customers to access through digital channels, such as the internet, mobile, phone, social network sites, and so on (Cuesta, Ruesta, Tuesta, & Urbiola, 2015).

Technology Acceptance

In this study, we focus on individual acceptance of digital banking product or services. Researchers have examined Internet banking and mobile banking from both the technology acceptance model (TAM), and the unified theory of acceptance and use of technology (UTAUT) model. User acceptance of technology has been an important field of study for several years now, which tries to explain and predict the actual use of a particular system or technology.

TAM, extending the theory of reasoned action (TRA), describes that concepts like perceived usefulness and perceived ease of use will determine an individual's intention to adopt a technology or system, and furthermore the intention to use will directly impact the actual use of technology or system (Davis, 1989). Perceived ease of use directly affects perceived usefulness as well (Davis, 1989). In TAM, perceived usefulness is related to the level of an individual's agreement that the technology or system will enhance the job performance, while perceived ease of use is defined as the perception of the extent to which an individual agrees that the technology or system will require less effort (Davis, 1989).

As an extension to TAM, Unified Theory of Acceptance and Use of Technology (UTAUT) model provides a framework to explain user intentions and subsequent usage behaviours. UTAUT model describes four main factors namely: performance expectancy, effort expectancy, social influence and facilitating conditions, along with four moderating factors as: gender, age, experience, and voluntariness of use (Morris, Venkatesh, Davis, & Davis, 2003).

Among four main factors, performance expectancy, effort expectancy, and social influence have direct impact on behavioural intention, whereas the other factor, facilitating conditions affect use behaviour. According to Morris, Venkatesh, Davis and Davis (2003), performance expectancy is the extent to which a person thinks that using the system will boost the productivity or obtain

gains in term of performance while effort expectancy can be referred as the extent to which a person agrees or perceives that it is easy to use technology or the systems. Also, social influence refers to "the degree to which an individual perceives that important others believe he or she should use the new system" (Morris et al., 2003, p. 451) whereas facilitation conditions are considered as "the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system" (Morris et al., 2003, p. 453). For example, online credit card payment is facilitated when no extra surcharge is required on top of the payment amount.

Influential factors in digital banking

In a digital banking context, customer satisfaction and service quality factors both have been identified to have an influence on post-purchase behaviours (Gan, Clemes, Wei, & Kao, 2011). Customer satisfaction is defined as "an outcome of purchase and use resulting from the buyer's comparison of the rewards and costs of the purchase in relation to the anticipated consequences" (Churchill Jr & Surprenant, 1982, p. 493) and as an emotional state responding to the service assessment (Westbrook, 1981). Moreover, service quality refers to how the expectation about a service performance is related to the experienced service performance the customers perceive (Zeithaml, Berry, & Parasuraman, 1988).

Customer Satisfaction

Customer satisfaction has been termed as the post-decision customer experience based on the comparison result of performance and expectation (Caruana, 2002). By all means, when disconfirmation arises from discrepancies between performance and expectation, customers can be satisfied or dissatisfied after consumption of products or service (Caruana, 2002). Expectations are defined as "a normative standard of future events", which are stable and not affected by the marketing or competitive factors (Boulding, Kalra, Staelin, & Zeithaml, 1993, p. 8). Therefore, customer satisfaction can help organisations influence customers' decisions by constantly providing expected products or services (Caruana, 2002).

According to Giese and Cote (2000), extensive research has been conducted to study customer satisfaction and its components. Customer satisfaction represents a measurement framework for company performance in delivering products or services process and helps companies develop a customer-based culture and strategy to sustain the competitive advantages (Mihelis, Grigoroudis, Siskos, Politis, & Malandrakis, 2001). Digital banking products or services provide various service channels that enable customers to manage their pace with digital banking products or services. According to Oliveira and von Hippel (2011), experienced digital banking customers are lead users as the products or services they build for their usage are at a leading-edge potential in the commercial context. Lead users are satisfied through a co-development of innovation relationship (Ranjan & Read, 2016) or advanced service portals (Oliveira & von Hippel, 2011). There are also possibilities that individuals who are satisfied may not adopt digital banking products or services depending on the size of market that the competition is in (Gan, Cohen, Clemes, & Chong, 2006; Ramachandran & Chidambaram, 2012). Therefore, customer satisfaction can determine the behavioural intention instead of the actual use behaviour.

Service Quality

Service quality is essential to support the intended individual behaviours. In a digital banking context, service quality can be termed as an integration of customer service quality, digital systems quality and banking product quality (Sharma, Govindaluri, & Al Balushi, 2015). With limited resources to maintain a high-level credibility of digital banking products or services, the the bank authorities should focus more on level of responsiveness to requests, reliability on their work and access to customer service quality, enhanced usability and accuracy in digital systems quality, and product variety and diverse features in banking product quality respectively (Sharma, Govindaluri, & Al Balushi, 2015). High service quality can help create a "bond" with customers if it consistently meets the demand at a higher standard and provides personalised services by tracking customer behaviour information to manage customer experiences (Sharma, Govindaluri, & Al Balushi, 2015). Therefore, long-term customer relationships can be developed and maintained.

HYPOTHESIS DEVELOPMENT

The UTAUT model is composed of four key constructs serving as independent variables, two constructs about behaviour intention and use, as well as four moderators. Performance expectancy construct is about whether the system would be helpful for daily work and life regarding swift completion of the transaction and high successful action rate, which determines the intention use of systems (Zhou, Lu, & Wang, 2010). For example, an individual will pay for the house bills by secured digital banking products or services. The successful completion of this transaction to fulfil a general payment request

is part of performance expectancy. Alternatively, an individual has a complaint about a banking product or services. The successful submission of complaining request by unsecured channel like Facebook, Twitter is also part of performance expectancy. Thus, we have:

H1: Performance Expectancy is positively associated with Behavioural intention in digital banking industry.

Effort expectancy means whether users can easily navigate online digital banking portal, mobile banking portal, or any unsecured digital banking portal in terms of system access, system interaction, and the ease to perform the desired functionalities, which determines the intention use of systems (Zhou, Lu, & Wang, 2010). Comparing to TAM model, concepts of effort expectancy and perceived ease of use match (Venkatesh & Davis, 2000). For example, an individual can pay the house bills through online digital banking channel and mobile banking channel. The less effort and time spent on this transaction is part of effort expectancy. Thus, we have:

H2: Effort Expectancy is positively associated with Behavioural intention in digital banking industry.

Social influence means refers to the use of the system being socially compatible with family members, friends, and the company regarding interacting with individuals and other entities, which determines the intention use of systems (Zhou, Lu, & Wang, 2010). Comparing with TAM model, social influence matches the concept of external variables (Venkatesh & Davis, 2000). Thus, we have:

H3: Social Influence is positively associated with Behavioural intention in digital banking industry.

The UTAUT hypothesised that four factors would moderate the relationships shown in their model. First, gender is referred as one moderator to affect the constructs of performance expectancy, effort expectancy, and social influence. Second, age is referred as one moderator that potentially impacts the factors of performance expectancy, effort expectancy, social influence, and facilitating conditions. Third, the experience is referred as a moderator that will have an influence on effort expectancy, social influence, and facilitating conditions rather than performance expectancy. Also, voluntariness of use is identified as a moderator that impacts to social influence only (Morris, Venkatesh, Davis, & Davis, 2003).

To understand moderators, customer profiles of digital banking products or services should be identified first regarding gender, age, experience, and voluntariness. Customer profile including gender, age, experience, voluntariness matters in determining customer behavioural intention (Morris, Venkatesh, Davis, & Davis, 2003). Digital banking products or services are built on Internet and computer usage. The preference of using the Internet will have an impact on the voluntariness of adopting digital banking products or services. Also, in the digital era, the level of demand for digital banking products or services is driven by the number of individuals who are using the Internet, mobile devices, and social media. The population of global Internet users and mobile users is the primary factor as all digital products or services are delivered through either online or mobile channels. Thus, we have:

- *H1a: Gender moderates the relationship between Performance Expectancy and Behavioural intention in the UTAUT in digital banking industry.*
- *H1b: Age moderates the relationship between Performance Expectancy and Behavioural intention in the UTAUT in digital banking industry.*
- *H2a: Gender moderates the relationship between Effort Expectancy and Behavioural intention in the UTAUT in digital banking industry.*
- *H2b: Age moderates the relationship between Effort Expectancy and Behavioural intention in the UTAUT in digital banking industry.*
- *H2c: Experience moderates the relationship between Effort Expectancy and Behavioural intention in the UTAUT in digital banking industry.*
- *H3a: Gender moderates the relationship between Social Influence and Behavioural intention in the UTAUT in digital banking industry.*
- *H3b: Age moderates the relationship between Social Influence and Behavioural intention in the UTAUT in digital banking industry.*
- *H3c: Experience moderates the relationship between Social Influence and Behavioural intention in the UTAUT in digital banking industry.*
- *H3d: Voluntariness of use moderates the relationship between Social Influence and Behavioural intention in the UTAUT in digital banking industry.*

Satisfaction conditions relate to attitudes or future intentions to use the technology or system based on past experiences of using digital banking products or services (Gan et al., 2006). According to Olsen (2002), repurchase behavioural intention is significantly associated with the

level of customer satisfaction. Individuals who are satisfied with the experience of digital banking products or services are not always using digital banking products or service in next experience since facilitation conditions affect the actual use behaviour (Shih & Fang, 2004). Therefore, satisfaction conditions can determine the behavioural intention towards digital banking products or service. Also, satisfaction, as an attitude coming end users, should be an ongoing innovation relationship between banks and customers (Ranjan & Read, 2016). Therefore, customer profile including age, gender and experience, does matter in generating customer satisfactions. Experienced users are the lead users in digital banking products or services (Oliveira & von Hippel, 2011). Thus, we have:

- *H4: Satisfaction Conditions is positively associated with Behavioural intention in digital banking industry.*
- *H4a: Gender moderates the relationship between Satisfaction Conditions and Behavioural intention in digital banking industry.*
- *H4b: Age moderates the relationship between Satisfaction Conditions and Behavioural intention in digital banking industry.*
- *H4c: Experience moderates the relationship between Satisfaction Conditions and Behavioural intention in digital banking industry.*

Service quality is related to the outcome of digital banking products or services meeting the quality expectation of customer service, digital systems, along with products or services in general (Sharma, Govindaluri, & Al Balushi, 2015). First, better services can build a long-term relationship with customers, associating with the repurchase behavioural intention (Ramachandran & Chidambaram, 2012). Second, TAM model describes that the perceived ease of use towards digital systems quality has an influence on behavioural intention (Davis, 1989). Third, products or services quality can be tracked and managed by enabling tracking in digital channels across the responsiveness, reliability, and accessibility of digital banking products or services (Sharma, Govindaluri, & Al Balushi, 2015). Therefore, service quality conditions can determine the behavioural intention towards digital banking products or services. Also, service quality, as a perceived value from customers, will vary depending on customer demographics (Santos, 2003). Therefore, customer characteristics difference, including age, gender and experience, does matter in service quality conditions. Thus, we have:

- *H5: Service Quality Conditions is positively associated with Behavioural intention.*
- *H5a: Gender moderates the relationship between Service Quality Conditions and Behaviour in digital banking industry.*
- *H5b: Age moderates the relationship between Service Quality Conditions and Behaviour in digital banking industry.*
- *H5c: Experience moderates the relationship between Service Quality Conditions and Behaviour in digital banking industry.*

By adding service quality and customer satisfaction as new constructs into UTAUT model, new direct determinants can be proposed to affect individual's

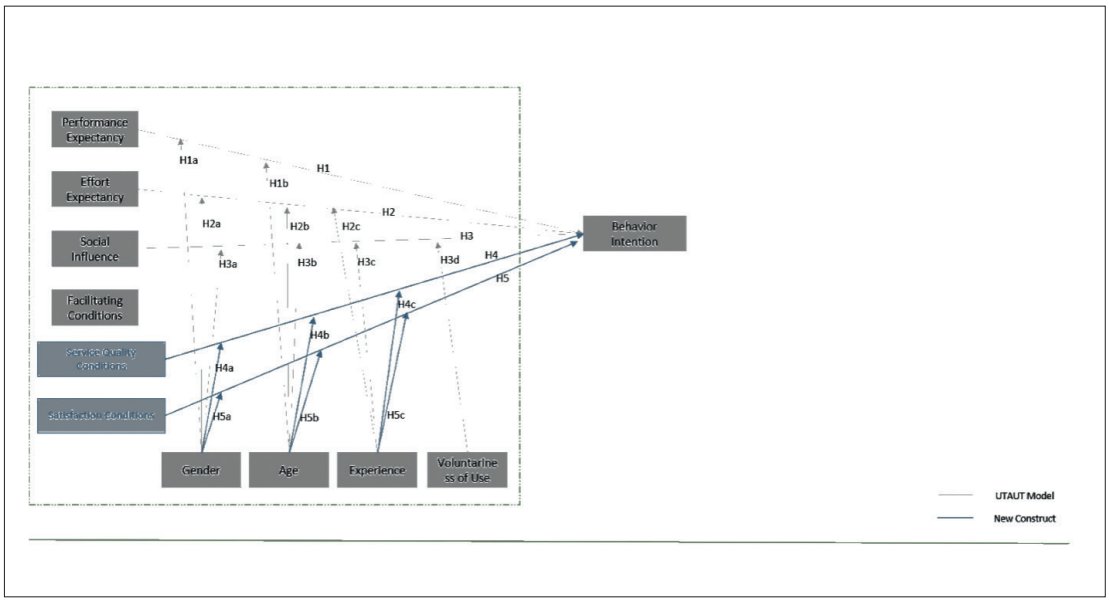

Figure 1: Proposed research model

behavioural intention. Like other direct determinants in UTAUT model, service quality condition and satisfaction condition are expected to be moderated by customer profile such as gender, age, and experience (Tam, 2004). Figure 1 demonstrates the proposed research model.

Proposed model does not include use behaviour (UB) construct as in the original UTAUT model since this study aims to answer the question on how customers respond to digital banking products or services from individual behavioural intention perspective.

The experience result is converted into dichotomous variable representing whether or not individual users have adopted digital banking products or services in the past. Thus, the used experience (UE) is represented as a dependent variable which has been affected by facilitating conditions and behavioural intention (Yu, 2012).

METHODS

The research adopts a quantitative methodology. The on-line survey has been conducted to answer the research question "how do customers respond to digital banking products and services in New Zealand?" from individual behavioural intention perspective.

Measures

The scales used in this study are adopted from validated instruments from prior studies. Scales including behavioural intention to use the system section, performance expectancy section, effort expectancy section, social influence section, facilitating conditions section, voluntariness of use section, derives from UTAUT model (Morris, Venkatesh, Davis, & Davis, 2003). Scales on service quality conditions section and satisfaction conditions section, derives from the service quality and intentions research (Su, Swanson, & Chen, 2016).

Sample

Data were collected from social media sites as there are varioud advantages of using social media as data collection platform (Alshaikh, Ramzan, Rawaf, & Majeed, 2014). According to Couper (2001), social network sites for surveys could offer a large user base from Facebook, Linkedin and Twitter. The increasing user base trend is hard to ignore. Social networking sites, as an entry to the on-line survey, provides more possibility to expose the survey to New Zealand users and reach them. There are previous studies to collect data from Facebook users (Rife, Cate, Kosinski, & Stillwell, 2016) and WeChat users (Yang, Mok, Au, Lai, & Ng, 2016).

Data Collection

This study collects data from on-line survey via social media to randomly invite customers of New Zealand banks to participate in this survey. In this study, three social media channels have been applied in this survey are Facebook, LinkedIn, and Wechat. Facebook and Wechat both are commonly accepted for personal use, whereas LinkedIn is primarily for business use.

The target population is all New Zealand bank customers. However, the ten banks[1], including ANZ Bank, Kiwi Bank, ASB Bank, Westpac Bank, BNZ Bank, Cooperative Bank, Heartland Bank, HSBC, TSB Bank and SBS Bank, are the most common banks in New Zealand. Therefore, those banks are chosen as samples. Their customers' responses, therefore, can represent the digital banking preferences at a national level.

Analysis

The partial least squares (PLS) method, an SEM-based method, was used for the identification of the research model along with its evaluation. PLS is a variance-based modelling approach, and has been preferred over covariance-based modelling approaches for incremental researches (Hair, Ringle, & Sarstedt, 2011). Besides, it also works better on smaller sample size than structural equation modelling (SEM) and regressions (Compeau & Higgins, 1995). Also, the PLS-SEM analysis validates the measurement model (Hair, Ringle, & Sarstedt, 2011). It also enables analysis of the relationships among latent variables and measurable variables at the same time (Haenlein & Kaplan, 2004). Furthermore, since the main objective of this study is to predict key constructs and identify key constructs instead of theory testing or theory confirmation, the PLS-SEM is a better analysis approach (Hair, Ringle, & Sarstedt, 2011).

The two-step approach was adopted to assess the measurement model and the structural model along with the considered moderating variables (Anderson & Gerbing, 1988). This analysis is to ensure the reliability and validity of the measurement model. WrapPLS (version 5.0) was used to perform the analyses.

1 Reserve Bank of New Zealand 27 banks registered in New Zealand (https://www.rbnz.govt.nz/regulation-and-supervision/cross-sector-oversight/registers-of-entities-we-regulate/registered-banks-in-new-zealand). Among these banks while 15 of them are incorporated in New Zealand, 12 of them operate as branches of "overseas-incorporated" banks. Considering various factors such as number of employees, branches, ATMs, Assets, liabilities, operating income and net profit, although the rankings change for each, these banks are usually ranked within top ten banks in New Zealand (https://nzbanks.com/largest-banks-new-zealand).

RESULTS

Data has been acquired from 81 respondents. However, 19 responses are considered invalid because all survey questions are not answered. Therefore, in total, there is 62 valid responses in this study. Among several reasons for choosing PLS-SEM over covariance-based SEM (Lin et al., 2020), major ones include the superior performance and efficiency (Hair, Hollingsworth, et al., 2017) of PLS/PLS-SEM over CB-SEM for small sample size, being free from normality assumption and the focus being the prediction for PLS studies. Generally, the minimum sample size for the PLS analysis can be determined with 10-times rule (Hair, Ringle & Sarstedt, 2013; Lin et al., 2020; Civelek, 2018; Barclay, Higgings, & Thompson, 1995). This rule indicates that the minimum sample size that will work for PLS analysis should be "equal to 10 times the largest number of formative indicators to measure the construct in the outer model, or the largest number of structural paths directed at a particular latent construct in the inner model" (Lin et al., 2020, p. 1371). However, Hair, Hollingsworth et al., (2017) indicate that sample size determination should be complemented with power analysis.

Considering another method, called the R-square method (Kock & Hadaya, 2018) developed based on Cohen's seminal works (1988; 1992), minimum sample size can be determined based on: i) the maximum number of path; ii) level of significance; and iii) the minimum value of R2 in the model. Based on this method, in a model with number of paths pointing to a construct being five requires a sample size at least 40 (our sample size is 62) given the R2 value is at least 0.50 (our R2 is ARS=0.661 for the study) at 0.05 significance level and 80% statistical power (Hair book). Similarly, with the same statistical power, number of paths but at 0.01 significance level, and minimum R2 of 0.25, minimum sample size can be 62 (Hair, Hollingsworth et al., 2017). Considering power, 10-times rule and R-squared method together for determining the sample size show that our study has sufficient sample size for the PLS analysis.

Since the survey has been distributed through social networking sites without a defined sample group, the response rate cannot be calculated in this case (Nulty, 2008). Participants of this research are age between 18 and 72 years old. The survey was developed on the modified model including the basis of UTAUT model and new constructs of service quality conditions and satisfaction conditions.

The descriptive analysis in this study was conducted to determine how high the behavioural intention of adopting digital banking products or services. Table 1 presents the descriptive analysis of the sample in this research.

About slightly over half (53%) of respondents were male and slightly less than half (47%) were female. Majority (73%) of the respondents aged between 18 and 36. Slightly over half (52%) of respondents had been using the digital banking products or services for more than four years, whilst 6% had been using it for less than a year, about 13% for more than one but less two years, about 22% for more than three but less than four years, and about 6% had no experience.

Measurement Model Analysis

Confirmatory factor analysis is conducted against measurement model before the analysis of model fitness and validity check are conducted. CFA enables the researcher to confirm or reject the theory, focusing

Table 1: Descriptive Analysis

Item	Category	Sample Size	%
Gender	Male	33	53%
	Female	29	47%
Age	57 - 72	4	6%
	37 - 56	13	21%
	18 - 36	46	73%
Experience	Never	4	6%
	Less than one year	4	6%
	1-2 years	8	13%
	3-4 years	14	22%
	More than four years	33	52%

on both extracting factors from the statistical results and prior knowledge of which factor belongs to which construct (Ahire & Devaraj, 2001). The result of the CFA as shown in Table 2 indicated that the factors loadings are above the thresholds.

Validity refers to the extent that the measured variables represent the theoretical variables that are designed to measure (Hair, Blake, Babin, & Tatham, 2006). Convergent validity and discriminant validity are two well-known validity types that can be helpful in construct validity measurement (Hair, Blake, Babin, & Tatham, 2006). Convergent validity of a construct is related to how much indicators of a construct converge, which can be assessed through factor loadings, variance extracted and reliability (Hair, Blake, Babin, & Tatham, 2006). Cronbach alpha and another well-known reliability measure, composite reliability measure, were used to test the reliability of the scale constructs for proposed model and alternative model. The reported reliability of the Cronbach alpha coefficient should be above 0.70 being acceptable (Pallant, 2013) and composite reliability (CR) values should be at least 0.7. The reliability for each construct is illustrated in Table 2. In measurement model, all values of Cronbach alpha coefficient less than 0.70 (Palanisamy, Verville, Bernadas, & Taskin, 2010).

Convergent validity can be assessed through investigation of average variances extracted (AVE). It is recommended that AVE threshold should be 0.5 for acceptable validity (Kock, 2015).

Discriminant validity is to explain that how one construct is distinct from other constructs (Hair, Blake, Babin, & Tatham, 2006). One approach is to validate correlations with the square root of AVE for that construct. Discriminant validity is supported whenever the AVE is consistently higher than the other constructs' squared correlation (Hair, Blake, Babin, & Tatham, 2006). Correlations presented in Table 3 showing that all the squared constructs' inter-scale correlations are lower than the constructs' (square root of) AVE, which indicates good discriminant validity for the model. At the end of the measurement model, facilitating conditions construct was removed from the model because of the issues with reliability and validity.

Table 2: Confirmatory Factor Analysis and Reliability Measures

	BI	PE	EE	SI	SQC	SC	Cronbach's Alpha	Composite Reliability
BI_1	**0.932**	0.063	-0.078	0.013	0.088	-0.115	0.930	0.955
BI _2	**0.915**	-0.066	0.044	-0.001	-0.146	0.207		
BI _3	**0.962**	0.001	0.033	-0.012	0.054	-0.085		
PE_1	0.223	**0.906**	-0.262	0.096	0.12	-0.029	0.847	0.9
PE_2	-0.063	**0.87**	-0.007	-0.203	-0.023	0.202		
PE_3	-0.045	**0.918**	0.1	-0.093	0.029	-0.009		
PE_4	-0.174	**0.609**	0.248	0.287	-0.19	-0.233		
EE_1	-0.149	0.21	**0.827**	-0.106	-0.044	-0.131	0.789	0.876
EE_2	0.07	-0.092	**0.84**	0.155	0.096	-0.006		
EE_3	0.076	-0.113	**0.847**	-0.05	-0.052	0.133		
SI_1	0.013	-0.188	0.205	**0.935**	-0.02	-0.098	0.881	0.927
SI_2	0.006	-0.114	0.071	**0.926**	0.2	-0.193		
SI_3	-0.021	0.338	-0.308	**0.835**	-0.199	0.324		
SQC_1	0.059	0.044	0.331	0.288	**0.795**	-0.261	0.753	0.86
SQC _3	-0.152	-0.073	-0.288	-0.241	**0.766**	0.197		
SQC _2	0.078	0.024	-0.048	-0.05	**0.892**	0.063		
SC_1	0.062	0.083	-0.15	-0.034	0.396	**0.891**	0.811	0.928
SC_2	-0.013	0.024	-0.006	0.066	-0.061	**0.971**		
SC_3	-0.051	-0.116	0.167	-0.04	-0.351	**0.834**		

Note: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Service Quality Conditions (SQC), Satisfaction Conditions (SC), Behavioural intention (BI)

Table 3: Variable Correlations

	Measurement model					
Construct	**BI**	**PE**	**EE**	**SI**	**SQC**	**SC**
BI	0.937					
PE	0.248	**0.835**				
EE	0.495	0.347	**0.838**			
SI	0.121	0.306	0.19	0.9		
SQC	0.449	0.222	0.693	0.241	**0.82**	
SC	0.461	0.194	0.735	0.107	0.754	**0.901**

Structural Model Analysis

Having tested the measurement model, the structural model analysis is conducted to test the hypothesised proposed model and the relationships among the constructs. Compared to the measurement model, the structural model focuses on the form and magnitude of the relationships among study constructs (Hair et al., 2006).

Various goodness-of-fit statistics and quality indices are measured. Proposed model indicates that measurement of Average Path Coefficient (APC=0.180) and Average R-Squared (ARS=0.661) are a good fit (Jaradat & Al Rababaa, 2013). Besides, proposed model represents large effect size from the measurement of Tenenhaus GoF (with the value of 0.716) (Kock, 2015). Moreover, the Sympson's Paradox Ratio (SPR=0.750) in proposed model shows good quality (Kock, 2015).

Table 4 shows the path coefficients and p-values for each variable for the proposed model. The results indicate that constructs, including performance expectancy (positive), effect expectancy (negative), and

Table 4: Path Coefficients and P-Values

	Proposed model	
Constructs	**Path Coefficients**	**P values**
PE	0.267	*
EE	-0.427	***
SI	0.112	0.179
SQC	-0.195	*
SC	0.156	0.099
Gender*PE	0.067	0.296
Gender*EE	-0.12	0.163
Gender*SI	0.007	0.478
Gender*SQC	-0.141	0.122
Gender*SC	-0.174	0.074
Age*PE	-0.104	0.197
Age*EE	-0.073	0.278
Age*SI	-0.148	0.11
Age*SQC	0.149	0.11
Age*SC	-0.324	**
Exp*EE	-0.279	**
Exp*SI	-0.063	0.305
Exp*SQC	-0.578	***
Exp*SC	0.115	0.174
VU*SI	-0.107	0.19

Note: P values Significance Level, *** Less than 0.001, ** Less than 0.01, and * Less than 0.05

service quality conditions (negative) have significant effect on behavioural intention to use digital banking products or services.. Also, the satisfaction conditions has no significant effect on behavioural intention of digital banking products or services. The results also indicate that user age has a negative and significant moderating effect on satisfaction conditions, and user experience has negative and significant moderating effect on effort expectancy, and service quality conditions.

Based on the results, hypotheses H1, H2, H3, H5, H5b, H2c, and H4c are supported. However, our results did not support the hypotheses H4, H1a, H2a, H3a, H4a, H5a, H1b, H2b, H3b, H4b, H3c, H5c, and H3d.

DISCUSSION

It is suggested by the proposed model results that users' behavioural intention on digital banking products or services can be predicted from performance expectancy, effort expectancy and service quality conditions. In addition, age and experience on digital banking products or services are playing an important moderating role towards behavioural intention of digital banking products or services.

Among those factors, performance expectancy, effort expectancy, and service quality conditions are the most significant determinants that have a direct effect on behavioural intention towards digital banking products or services. This can be an indication to New Zealand banks that compared to satisfaction, digital banking products or services should be able to help customers resolve their problems, develop the user-friendly interface, reduce effort on systems, build a long-term and mutually satisfying relationship with customers and offer improved, high-quality services. Also, the effect of effort expectancy is relatively larger than other factors, which comes to the first in importance. This result is consistent with the previous research (Slade, Dwivedi, Piercy, & Williams, 2015). Therefore, when banks develop digital banking products or services, they need first to consider effort expectations toward these products or services along with performance expectations, and service quality conditions. Bank can improve the efficiency of digital banking products or services through the adoption of technology. Cutting-edge technology drives the changing habits of customers and the way to construct digital banking products or services. Process automation with intelligence through self-service portals can reduce the effort on digital journeys. Thus, effort expectancy can be improved. Banks can also improve their digital banking products or services based on users' satisfaction feedback to meet customers' various expectations better. Furthermore, banks need to run a serial of continual improvement processes based on the implication of satisfaction feedback to provide long-term oriented and high-quality services. Thus, service quality can be improved. The effect of performance expectancy also deserves further attention. Existing banking products or services can be obtained through traditional channels. Digital banking products or services are a new entry to access existing banking products or services. Regarding what existing banking products or services should be digitalised, and what new banking products or services should be created can be more critical to meet customers' performance expectations. These analyses help banks understand more about how digital banking products or services can be effective in customers' daily work.

Regarding moderating variables (age, and experience), effort expectancy is moderated by individual experience. This can be an indication that individual experience difference will have different effort expectation. When providing digital banking products or services to a specific customer group, banks can respond to customers within an expected effort expectation to improve adoption of digital banking product or services. More than that, the proposed model results indicate that gender and age do not influence the performance expectancy towards behavioural intention. This shows that regardless of age and gender, New Zealand bank customers have their common performance expectation and are affected by their demands and actions towards using digital banking products or services. They expect digital banking products or services to be helpful in their daily work and life. Also, service quality conditions are moderated by customer experience. Regardless of gender, different levels of individual experience have their service quality expectations towards the perception of technology as well as digital banking products or services. Furthermore, satisfaction conditions are moderated by customer age. Regardless of gender and experience levels, different age groups of customers have their satisfaction measurement depending on the past digital banking products or services experience.

Implications

From a theoretical perspective, this research integrates UTAUT model with service quality and satisfaction condition concepts to explain behavioural intention of digital banking products or services. In addition to technology perceptions such as performance expectancy, effort expectancy, service quality conditions also have a significant effect on predicting behavioural

intention in New Zealand. This shows that, when examining the factors affecting digital banking products or services behavioural intention, UTAUT can be taken into consideration, but also pay attention to the effect of good service quality conditions. Moreover, the effect of satisfaction conditions deserves further attention. Future research can apply satisfaction conditions to examine individual behavioural intention of other technologies and digital products or services.

From a practical perspective, this study shows that products or services providers should firstly improve the effort expectancy when providing products or services. Regarding service quality, banks can segment the customer profiles and provide differentiated expectation during the journey of using products or services. For example, university students may be more concerned with ease of use, whereas working professionals would focus on the reliability and time costs of digital banking products or services. Products or service providers can also design different service level agreement models to meet the demand of different age group, experience group, and gender group. Banks can also run marketing campaigns to enhance users' knowledge about digital banking products or services and skills in using them. Thus, users' perceptions of service quality can be improved.

Conclusion, Limitations and Future Research

Compared to traditional banking products or services, digital banking products or services can provide valuable added-value to customers. New Zealand banks are expecting to be beneficial to the wider digital banking adoption. Therefore, banks are expected to understand customer view of digital banking products or services and predict behavioural intention towards digital banking products or services. This research analyses factors determining behavioural intention of digital banking products or services from UTAUT model with service quality and satisfaction variables. The results show that the behavioural intention of digital banking products or services is affected not only by the technology perception but also by the service quality towards consumption of digital banking products or services. These results lead us to encourage development on understanding customers' demand and insight to deliver appropriate digital banking products or services which may have been discovered before.

This study answers the question how New Zealand bank customers respond to digital banking products or services from behavioural intention perspective. This result should help New Zealand banks understand the appetite of their customers and avoid spending excessively may have little effect on whether the customer will determine to use digital banking products or services in New Zealand.

Research Limitations

This research has the following limitations. First, this research mainly explains digital banking products or services behavioural intention using UTAUT model. The integration with other models may provide more insights and comprehensive understanding. Second, the research only receives a limited number of survey responses. More participants' response may provide more validity. The results may not generalise to the whole nations or countries. Third, user behaviour is dynamic and continuously changing. A longitudinal research may provide more insights on how customers respond to digital banking products or services.

Researchers can also examine if the results can be generalised to the whole nations or other similar countries with relatively population and GDP. This may provide richer insights on digital banking products or services adoption worldwide. Last but not the least, conducting more analysis to find out whether the intention and usage of some digital banking services or products differ for early adapters and late adopters of such services and products could be an interesting future study.

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